

anticipated under 35 U.S.C. § 102 and are not unpatentable under 35 U.S.C. § 103. Accordingly, it is believed that this application is in condition for allowance. **If, however, the Examiner believes that there are any unresolved issues, or believes that some or all of the claims are not in condition for allowance, the applicant respectfully requests that the Examiner contact the undersigned to schedule a telephone Examiner Interview before any further actions on the merits.**

The applicant will now address each of the issues raised in the outstanding Office Action. First, however, the undersigned would like to thank Examiner Cruz and SPE Adams for courtesies extended during the telephone interview on November 18, 2003 (hereafter referred to as "the telephone interview"). Independent claims 1, 10 and 14 were discussed with respect to the Higurashi patent. Basically, SPE Adams agreed that the Higurashi patent does not anticipate these claims under 35 U.S.C. § 102, but felt that it might render these claims obvious under 35 U.S.C. § 103, noting, in particular, Figures 3E and 3F of the Higurashi patent. Although the undersigned believes that the last Office Action should have therefore been withdrawn and a new Office Action should have been issued, SPE Adams requested receiving arguments from the applicant first. Accordingly, to expedite the examination of this application, the applicant addresses both the issues under 35 U.S.C. § 102 raised in the final Office Action, as well as potential rejections under 35 U.S.C. § 103 first raised during the telephone interview.

Rejections under 35 U.S.C. § 102

Claims 1-5, 10 and 14 stand rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,222,593 ("the Higurashi patent"). The applicant respectfully requests that the Examiner reconsider and withdraw this ground of rejection in view of the following.

Independent claims 1, 10 and 14 are not anticipated by the Higurashi patent because the Higurashi patent does not teach a correction data calculating section for calculating correction data for correcting input images for respective projectors, **on the basis of the acquired test images, such that a target brightness, or a continuous brightness, is achieved** across the whole projection area including overlapping regions. These claims are reprinted below with these features depicted in bold typeface:

1. An image projection and display device comprising:
 - a plurality of projectors;
 - a projection screen forming a focusing plane for projected images from the plurality of projectors, mutually overlapping regions existing between said images;
 - a test image storing section for storing prescribed test images;
 - an image capturing section for acquiring projected test images in which a prescribed test image is projected onto said projection screen respectively by each of said projectors;
 - a correction data calculating section for **calculating correction data for correcting the input images for the respective projectors, on the basis of the acquired test images, in such a manner that a target brightness is**

achieved across the whole projection area including the overlapping regions;

a correction data storing section for storing the correction data thus calculated; and

an image correcting section for correcting the images input to the respective projectors, by using said correction data. [Emphasis added.]

10. For use in an image projection and display device including a plurality of projectors and a projection screen forming a focusing plane for projected images from the plurality of projectors with mutually overlapping regions existing between the images, apparatus comprising:

a test image storing section for storing prescribed test images;

an image capturing section for acquiring projected test images in which a prescribed test image is projected onto said projection screen respectively by each of said projectors;

a correction data calculating section for calculating correction data for correcting the input images for the respective projectors, on the basis of the acquired test images, in such a manner that a continuous brightness is achieved across the whole projection area including the overlapping regions;

a correction data storing section for storing the correction data thus calculated; and

an image correcting section for correcting the images input to the respective projectors, by using said correction data. [Emphasis added.]

14. For use in an image projection and display device including a plurality of projectors and a projection screen forming a focusing plane for projected

images from the plurality of projectors with mutually overlapping regions existing between the images, a method comprising:

- storing prescribed test images;
- acquiring projected test images in which a prescribed test image is projected onto said projection screen respectively by each of said projectors;

- calculating correction data for correcting the input images for the respective projectors, on the basis of the acquired test images, in such a manner that at least one of (A) a continuous brightness and (B) a uniform brightness is achieved across the whole projection area including the overlapping regions;

- storing the correction data thus calculated; and

- correcting the images input to the respective projectors, by using said correction data. [Emphasis added.]

These features and the Higurashi patent are discussed below. First, however, as requested by SPE Adams during the telephone interview, claims 1, 10 and 14 are discussed in light of exemplary embodiments supporting these claims.

As described on page 17, line 17 through page 18, line 15 and shown in Figure 6, brightness data may be corrected to achieve a uniform brightness by correcting such data to obtain a target brightness H. As described on page 18, line 16 through page 21, line 2 and Figures 7 and 8, brightness data may be corrected to achieve a continuous brightness. Having introduced illustrative exemplary embodiments supporting claims 1, 10 and 14, the applicant will now address the Higurashi patent.

Although the Higurashi patent is similar to the present invention in that it concerns correcting projected

images making up a multiple-image display, it does not address correcting image data such that a target brightness (e.g., a uniform brightness or a continuous brightness) is achieved across the whole projection area including overlapping portions. Rather, the Higurashi patent is concerned with correcting for positional/alignment distortions (e.g., misalignment between a projector and the screen, and/or misalignments between projectors themselves), and also discusses correcting for distortion in a picked up image. These misalignments would otherwise result in "swung and tilted" images (See, e.g., column 4, lines 62-66.), or rotated and shifted images (See, e.g., column 7, lines 10-22.) Distortion in a picked up image may be the result of space-variant distortion in a camera lens. (See, e.g., column 9, line 57 through column 10, lines 3.)

The Examiner takes a portion of claim 7 out of context and contends it teaches that correction data for input images is determined such at that target brightness is achieved across the whole projection area, including overlapping portions. (See Paper No. 7, page 3.) More specifically, the portion of claim 7 cited by the Examiner states:

when the image pickup means enlarges and picks up an overlapping portion of all images projected by the plurality of projectors, **the parameter calculating means accurately calculates the second parameter** on the basis of data on the partially enlarged image obtained by the image pickup means.
[Emphasis added.]

Column 18, lines 13-18. In the Higurashi patent, claim 7 depends from claim 2 which depends from claim 1. Claim 1 specifies that the second parameter is, "for indicating a positional relationship between images projected on the screen by a plurality of projectors." Column 17, lines 6-8. The Examiner apparently misinterpreted this as an argument by the applicant that its invention was patentable for a reason not recited in the claims. (See Paper No. 7, page 7.) However, the applicant was not arguing that certain features were in the claims, only that the Examiner had to interpret recitations of a dependent claim in the Higurashi patent in the context of the base claim and any intervening claims. As can be appreciated from the foregoing, the Higurashi patent does not operate at the Examiner contends. Accordingly, claims 1, 10 and 14 are not anticipated by the Higurashi patent for at least this reason. Since claims 2-4 depend from claim 1 and since claim 5 depends from claim 4, these claims are similarly not anticipated by the Higurashi patent.

Although the Higurashi patent does discuss superimposing more than one image for use as a high brightness projector unit or multi-gradient projector unit (See, column 14, lines 18-21 and column 10, line 63-column 11, line 31.), this has nothing to do with calculating correction data for correcting the input images for the respective projectors, on the basis of the acquired test images, in such a manner that a target brightness is achieved across the whole projection area including the overlapping regions.

During the telephone interview, SPE Adams indicated that Figures 3E and 3F of the Higurashi patent might suggest correcting data to obtain a continuous brightness,

and requested that the applicant address this possibility. First, as discussed above, the data being corrected in the Higurashi patent is position data, not brightness data. An example of such correct position data can be appreciated, for example, by comparing Figures 6A and 6C of the Higurashi patent. Thus, the claims are not rendered obvious by Figures 3E and 3F of the Higurashi patent for at least this reason.

Moreover, even assuming, arguendo, that the pixel value data illustrated in Figure 3F could be considered to be brightness data, such corrected data is determined by multiplying it by a coefficient between 0 and 1 as shown in Figure 3E. (See, e.g., column 6, lines 2-12.) Figure 3E shows a simple coefficient that changes linearly over an overlapping portion. This neither teaches, nor suggests, calculating correction data for correcting the input images for the respective projectors on the basis of acquired test images as recited in independent claims 1, 10, and 14. Thus, the claims are not rendered obvious by Figures 3E and 3F of the Higurashi patent for at least this additional reason.

Furthermore, independent claim 1 recites calculating correction data for correcting the input images for the respective projectors, on the basis of the acquired test images, **in such a manner that a target brightness is achieved across the whole projection area including the overlapping regions.** Thus, even assuming, arguendo, that Figure 3F of the Higurashi patent somehow suggests a continuous brightness, it neither teaches nor suggests obtaining a target brightness (See, e.g., line H of Figure 6.) Accordingly, claim 1 is not rendered obvious by

Figures 3E and 3F of the Higurashi patent for at least this additional reason.

Rejections under 35 U.S.C. § 103

Claim 6 stands rejected under 35 U.S.C. § 103 as being anticipated by the Higurashi patent as applied to claim 1, and further in view of U.S. Patent No. 6,558,006 (hereafter referred to as "the Ioka patent"). The applicant respectfully requests that the Examiner reconsider and withdraw this ground of rejection in view of the following.

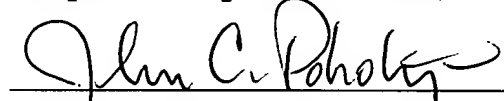
Since the Ioka patent is not a patent or publication "to another" and since it was not published or patented more than one year before the September 26, 2001 U.S. filing date of this application, it is not valid prior art. Accordingly, this ground of rejection is improper and should be withdrawn.

Conclusion

In view of the foregoing remarks, the applicant respectfully submits that the pending claims are in condition for allowance. Accordingly, the applicants request that the Examiner pass this application to issue.

December 8, 2003

Respectfully submitted,

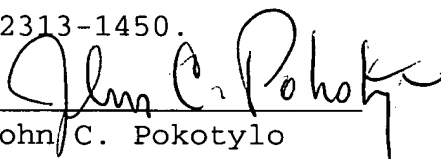


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I hereby certify that this correspondence is being deposited on **December 8, 2003** with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to the Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.


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